Owner's Manual

CAT2016

Please keep this manual in a secure place and hand it over to the new owner when you sell the craft.

If this is your first craft, or you are changing to a type of craft you are not familiar with, for your own comfort and safety, ensure that you obtain handling and operating experience before assuming command of the craft. Any boat dealer or national sailing federation or yacht club will be pleased to advise you of local sea schools, or competent instructors.

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1 WELCOME

Congratulations on becoming the new owner of a: CAT2016
Make sure you receive a full explanation of all systems from the person transferring ownership to you.

1.1 Boating Experience

If this is your first craft, or you are changing to a type of craft you are not familiar with, for your own comfort and safety, ensure that you obtain handling and operating experience before assuming command of the craft.

Any boat dealer or national sailing federation or yacht club will be pleased to advise you of local sea schools, or competent instructors

Regardless of the craft's seaworthiness and its certified design category, protection from freak sea and wind conditions cannot be guaranteed. Beware of offshore winds and currents. The ability, experience and fitness of the crew, therefore, should be taken into consideration before making any voyage.

1.2 Responsibility

It is the boat owner/operator's responsibility to:

1 Know the limitations of your boat;

2 Follow the rules of the road;

3 Keep a sharp lookout for people and objects in the water;

4 Ensure that the anticipated wind and sea conditions will correspond to the design category of your boat and that you and your crew are able to handle the boat in these

conditions;
5 Never sail when the operator is under the influence of drugs or alcohol;

6 Be aware of the crew/passenger's safety at all times;

7 Ensure all crew receive suitable training, particularly with regards to location and operation of safety equipment;

8 Reduce speed when there is limited visibility, rough water, people in the water nearby, boats, or structures;

9 Ensure the craft is properly maintained at all time;

10 Have the craft inspected by qualified personnel at regular intervals and whenever a cause for concern is raised; and

11 Ensure compliance with all legislation in place in the area of operation. These may include requirements for the carriage of life saving equipment, licensing of the helmsman and respect for the environment.

2 ABOUT THIS MANUAL

This manual has been compiled to help you to operate your craft with safety and pleasure. It contains details of the craft; the equipment supplied or fitted its systems and information on their operation. Please read it carefully and familiarise yourself with the craft before using it. Ensure that everyone who will operate the vessel reads this manual before setting out.

This manual complies with the EU Recreational Craft Directive (RCD) and should not be perceived as an exhaustive guide to the vessel. A manual is not a replacement for experience and common sense!

2.1 Original Equipment Manufacturer (OEM) Manuals

This manual includes important fundamentals regarding equipment supplied by manufacturers. More detailed information regarding such equipment can be found in manuals provided by the OEM. A list of these manuals is given here:

- Engine
- Steering gear
- Navigation lights
- Batteries

2.2 Safety Labels

The craft and this manual show symbols which advise the owner/operator and crew of imperative safety precautions to follow when operating and/or servicing equipment. The following symbols may be found on your craft. They should be respected at all times.

Hazard - usually followed by text

description (see following section)

Electrical Hazard

Fire Hazard

Fire Hazard

Read the Owner's Manual

Fuel fill point: letter "D" denotes suitability for diesel fuel

Sling position for safe lifting of the vessel

Dedicated discharge opening for extinguisher

2.3 Explanation of Hazard Warnings

Danger

Denotes an extreme intrinsic hazard exists which would result in high probability of death or irreparable injury if proper precautions are not taken.

Warning

Denotes a hazard exists which can result in injury or death if proper precautions are not taken.

Caution

Denotes a reminder of safety practices or directs attention to unsafe practices which could result in personal injury or damage to the craft or components.

Information

Denotes useful or important facts or suggestions that can greatly enhance safety and efficiency of operations.

Caution

Do not remove or obstruct any safety label. Replace any label which becomes illegible.

3 GENERAL ARRANGEMENT

3.1 Boat Identification & CE Marking Classification

Type of Boat:.....CAT2016

Manufacturer's Craft Identification Number.....GB-SJIxxxxxMMYY

Name of Boat Manufacturer.....RowingSolutions Ltd

RCD Design Category.....D, INSHORE

Maximum recommended number of people.....3 (adults)

1 RCD = EU Recreational Craft Directive See table in section 3.2.1
3 For maximum weight limit see: 3.2.3

CE

3.1.1 RCD Design Category Explanation

This vessel carries the CE marking (shown here) to indicate that it complies with the EU Recreational Craft Directive. It has been assigned the Design Category explained below:

A boat given design category D is considered to be designed to operate in winds up to force 4 (Beaufort scale) and the associated wave heights (significant wave heights up to and including 0.5m). Such conditions may be encountered in exposed inland waters, in estuaries and in moderate weather conditions.

3.2 Principal Dimensions

3.2.1 Hull Size (Dimensions in millimeters)

Length of Hull	LH	4670
Length - max. overall	LMAX	4670
Beam of hull	BH	1950
Beam - maximum	BMAX	1950
Freeboard fwd	FF	350
Freeboard amidships	FM	300
Freeboard aft	FA	250
Maximum draft	TMAX	300
Beam 'between hull centres	BCB	1650
Beam of Individual Hull	B	400

3.2.2 Maximum Recommended Power

Power measurement to EN ISO 8665 Marine propulsion engines and systems - Power measurements and declarations

Horsepower	20Hp
Kilowatts	14kW

3.2.3 Weights

All weights in kilograms (Kg)

Unladen Weight of craft (lightweight) without engine			200
Maximum Number of Persons	240		
Heaviest allowable outboard motor	55		
Portable fuel tanks	0		
Baggage, outboard, & other carry-on weights	155		
Max Load as on Builder's Plate	450	450	
Essential safety equipment & life-raft	10		
Weight of Fluids & Permanent Load	10	10	
Maximum Recommended Load		460	460
Weight Fully Laden			660

Note: the weight of the outboard engine supplied with the boat is a maximum: 52Kg

4 SYSTEMS DESCRIPTIONS

4.1 Bilge Pumps

This boat is not fitted with any bilge pumps.
It is recommended that a bailer is carried aboard for emergency bailing purposes. Ensure the bailer is protected against accidental loss.

⚠ Warning

Never use flammable solvents (i.e. kerosene) for bilge cleaning, however oily it becomes.

4.2 Electrical System

ALWAYS.....

- Check battery and charging system condition before going to sea
- Disconnect and remove the battery when the craft is in winter storage (cold weather areas) or long term storage

NEVER.....

- Work on the electrical installation while the system is energised;
- Modify the craft's electrical system or relevant drawings: installation, alterations and maintenance should be performed by a competent marine electrical technician;
- Alter or modify the rated current amperage of over-current protective devices;
- Install or replace electrical appliances or devices with components exceeding the rated current amperage of the circuit;

• Leave the craft unattended with the electrical system energised, except automatic bilge-pump, fire protection and alarm circuits.

• Petrol vapour can explode.

Danger

Only fit ignition protected, marine parts to replace such items as starters, distributors, alternators, generators, etc.

Warning

Do not use jump leads in the petrol engine/tank space or carry out any activity that could create sparks

Warning

Protective terminal covers, such as rubber boots on electrical connections, must be in place at all times except when servicing equipment.

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4.2.1 DC System

The direct current (DC) electrical system derives its power from the series of batteries listed below. The batteries supply the components listed in tables below which show the settings of the overload protection breakers/fuses.

The DC system consists of the following circuits:

The battery selector switch is located at: Main DC Panel Board Location:

Removal of Batteries

N/A - only one battery N/A - engine harness only

Battery Bank	Voltage	Rating	Battery Location	Disconnect Switch
Single Battery	12	38Ah	Below passenger seat	N/A

To remove the battery cables:
1 Turn off all items drawing power from the battery.

2 Turn the battery switch to the OFF position

3 Remove the negative cable first, then the positive cable. To replace the cables, first replace the positive cable, then the negative.

Caution

Ensure that the battery space is well ventilated at all times.

When charging and (dis)connecting a battery ensure that no water or metal objects can contact the terminals.

Caution

Battery Disconnection

Battery selector switch location: N/A - only one battery
Disconnect switch location(s): See table of batteries.

Batteries should be disconnected when not in use and especially while the boat is unattended.

Essential service such as electric bilge pumps are wired directly to the batteries and will run even if the battery disconnect switch is open.

Do not disconnect all batteries while the engine is running; alternator and wiring damage could occur.

Caution

Battery Maintenance

1. Check the fluid levels in the cells (if appropriate for the battery type) approximately every 4 weeks, and weekly in summer and hot zones.
2. The fluid level must be between the lower and upper markings.
3. Replenish only with distilled water. Do not use metal funnel.
4. Coat battery terminal clamps with silicone grease.
5. Keep batteries clean and dry.
6. The life of some battery types is shortened if drained to zero charge. It is recommended that a battery not be discharged more than 50%. If the battery does become run down, recharge it as soon as possible.
7. Running the engine to recharge the battery may not be effective. The alternator only creates charging power at higher engine speeds, idling for long periods will not generate enough power to recharge the battery.
8. If you need to charge a battery, use only a battery charger designed to charge automotive/marine batteries. Use charger only when batteries are disconnected from the boat's electrical circuit. Follow the charger instructions.
9. If your boat will not be used for several weeks remove the batteries from the boat and connect them to a charger.

4.3 Fuel System

The craft has: Portable
Petrol fuel system

The following components are supplied by the fuel system:

Item	Number	Location

Engine	1	On centerline on aft deck crossbeam

Refer to manufacturer's instructions for details of the above equipment.

Warning

Do not smoke or use open flame when filling with fuel, when working on the fuel system and when in the engine room.

Danger

Never use a flame to check for leaks

Warning

Inspect fuel lines at least annually. Replace if deterioration or openings are found.

Warning

If leakage is detected, have the system repaired before further use. System repairs should be made by a competent person.

4.4 Steering System

The boat's steering system has the following components:

Steering Hardware: Turning device: Mechanism:

Wheel
Drive unit
Direct link/Flexible cable

The craft is fitted with the following steering position(s):

1 Fwd starboard corner of decking

Caution

Refer to the system manufacturer's documentation for information pertaining to the steering gear.

Caution

All components of the steering system must undergo periodic inspection and maintenance to ensure safe operating conditions. Refer to the maintenance section of this manual for further details.

Warning

Failure of the steering system will cause loss of control of your boat. Any change in steering such as looseness, tightness, binding, etc., must be checked immediately by a qualified person.

5 PRE-LAUNCH OBSERVATIONS

5.1 Recommended Safety Equipment

1. Life jacket or buoyancy aid for each person
2. Compass
3. Anchor and line
4. First aid kit including compress
5. Bucket
6. VHF radio
7. Knife in protective sheath
8. Appropriate weatherproof clothing
9. Charts
10. At least 2 wraps
11. Thermal blanket
12. Distress flares
13. Binoculars
14. Drinking water

5.2 Risk of Loss of Stability

The stability and buoyancy of this boat has been assessed on the basis of the weights specified in section: 3.2.3

Caution

The sea can be unpredictable. Be prepared by carrying the above equipment, as a minimum, at all times.

Warning

The boat should never carry more than the manufacturer's recommended load. The load should be suitably distributed, bearing in mind that stability is most significantly reduced by any weight added high up in the boat

Caution

Stability can also be adversely affected by sloshing fluid. Bilge water should be kept to a minimum

Caution

The stability of this boat is significantly reduced at speeds above displacement speed.

Caution

Stability may be reduced when towing or lifting heavy weights using a davit or boom.

Caution

Breaking waves are a serious stability hazard

5.3 Risk of Flooding

Caution

The following openings are marked "WATERTIGHT OPENING - KEEP SHUT WHEN UNDER WAY" and care should be taken to observe this warning:

1. Port fwd inspection port
2. Port aft inspection port
3. Stbd fwd inspection port
4. Stbd aft inspection port

Caution

In rough weather, hatches, lockers and companionway/doorways should be closed to minimise the risk of water ingress.

Caution

Ensure all limber holes are clear

5.3.1 Through Hull Fittings including Seacocks

The following skin fittings are fitted in the hull of the craft. They provide the front-line defence against flooding and should be regularly inspected for condition. Valves should be frequently operated to ensure free movement.
In addition, it is recommended that all but drains and bilge discharges are closed when the craft is to be left unattended.

Ref.	Description	Location	Means of Closure
1	Stbd hull drain plug	Transom of stbd hull	Plastic screwed plug
2	Port hull drain plug	Transom of port hull	Plastic screwed plug

5.3.2 Strainers

Bilge pump intakes inside the boat, and intakes of water from outside the boat are fitted with protective baskets to avoid blockage by weed, leaves or other debris. Ensure these are kept clear at all times.

5.4 Risk of Fire

Always keep the bilges clean and check for fuel regularly

5.5 Risk of Falling Overboard

Information

NEVER

- obstruct portable extinguishers in lockers
- obstruct safety controls (shut off valves, switches)
- modify craft's systems, especially fuel.
- fill any fuel tank whilst machinery is running
- smoke while handling fuel
- use gas lights in craft

The working deck is the area of the boat that is safe for use at all times. Areas outside the specified working deck should only be used whilst leaving or arriving at a mooring or whilst the boat is not underway.

On this boat, the working deck area is defined as:
On the aluminium treadplate, amidships

Warning

Most slips and falls occur during boarding and disembarking. Be aware that wet decks can be slippery. Wear slip resistant footwear at all times.

6 NAVIGATION & OPERATION

6.1 Use of Engines

The craft is fitted with the following motive power: Engine 4 stroke spark-ignition

Max 20hp 4 stroke outboard Propeller As supplied with motor

Before starting the engine:

- Check fuel lines for damage and leaks.
- Check the bilge water level.
- Ensure that ventilation openings are clear to prevent overheating
- Ensure there is sufficient fuel for the anticipated journey - including a margin for contingencies.
- Take care not to damage fuel lines and check regularly that they are in good condition
- Avoid placing flammable materials on or near hot parts.

Danger

If a fuel leak or fumes are detected, do not start the engine.Ensure all crew leave the boat and have a qualified person repair the fault as soon as possible.

Warning

Controls installed with the motor must have a start-in-gear v device. It is the owner's responsibility to ensure this is so, should the engine or its controls be repaired/replaced.

6.2 Handling Characteristics

This craft is primarily intended to be supported by a combination of buoyancy and planing forces

Maximum engine power: 14 kW 20 hp Maximum speed: 17 knots 19 mph

Periodic inspection of the propeller for excessive wear or damage is recommended in order to maintain peak performance and to maximise the longevity of the engine.

Ensure all crew are informed about the craft's behaviour.

Before conducting any rapid acceleration or high-speed manoeuvres, passengers must be warned to sit and hold-on.

The helmsman may have to take sharp avoiding action at any time. Passengers should, therefore, be seated and holding-on when underway.

Caution

Seaways are infinitely variable and all craft can meet conditions that will challenge the boats handling characteristics and/or the helmsman's ability. Proceed with a margin for error at all times. Avoid making sharp turns at speed, particularly in a short seaway.

Caution

It is strongly recommended that helmsmen receive adequate training in boat handling before setting to sea for the first time.

Be aware that factors such as altitude, temperature, load, and bottom growth may affect performance.

6.3 Visibility from the Main Steering Position

Information

Operator vision from the helm can be obstructed by high trim angles of the craft and other factors caused by one or more of the following conditions:

- Propulsion engine trim angles
- Loading and load distribution
- Speed
- Rapid acceleration
- Sea conditions
- Rain and spray
- Darkness and fog
- Persons or movable gear in operator's field of vision

The international regulations for preventing collisions at sea (COLREGs) and the rules of the road require that a proper lookout be maintained at all times and observance of right of way. Make certain no other vessels are in the path before proceeding.

6.4 Navigation Lights

Night boating requires running lights. The craft is not fitted with the following navigation lights:

The running/navigation lights are controlled at the switch board.

Light	Mounting position
Anchor	Portable mast

Caution

Check for proper operation of navigation lights before heading out and carry replacement bulbs for all navigation lights

Caution

Always replace bulbs with one of the same wattage.

6.5 Anchoring, Mooring & Towing

It is the owner,s / operator's responsibility to ensure that the mooring lines, towing lines, anchor chains, and anchors are adequate for the vessel's intended use. Owners should also consider what action will be necessary when securing a tow line on board.

Breaking strength of forward strong point: 73.3 kN (7.5 tones)

Caution

The breaking strength of lines / chains should not exceed 80% of the breaking strength of the strong point to which it is attached.

Caution

Always tow or be towed at slow speed. Never exceed the hull speed of a displacement craft when towing or being towed

A tow line shall always be made fast in a way that it can be released when under load.

Caution

When at anchor, it is damaging to leave the full load of the boat resting on the windlass. It is recommended that the chain be tied onto a local strong point.

6.6 Filling With Fuel

Never smoke when refuelling, or inspecting or working with the fuel system.

Caution

For locations of filler caps, see: 3.2.3

Use the following procedure for filling tanks:
• Remove portable tank(s) from the craft for filling ashore.
• Open the filler cap and start filling the tank.
• Check the contents of the tank by monitoring the tank level indicator
• Do not fill the tank to its maximum: allow for expansion
• Close deck fittings tightly, but do not over-tighten since this will damage the rubber o-rings (make an entry in ship's log)

Caution

Fuel is considered chemical waste. Keep an absorbing cloth close by when filling tanks.

7 MAINTENANCE

Regular inspection and maintenance is an essential activity to ensure the boat's longevity and the crew's safety.

This section includes a generic table which details typical inspection and maintenance intervals. This is not specific to your craft and some sections will not apply.

The necessary frequency of service or maintenance depends upon the environment in which the boat operates. The intervals listed in this section should be viewed as maximums.

Modifications that may affect the safety characteristics of the craft should be assessed, executed and documented by competent people.

Caution

Any change in the disposition of the masses aboard may significantly affect the stability, trim and performance of the boat

Caution

		INTERVAL				
Item	Required Maintenance/Service	Before Every Use	After First 20 Hours	Every 25* Or 50 Hours	Every 50* Or 100 Hours	Every 6 mnth or Annual
Miscellaneous						
Battery	Check water level	X	X	X		
Navigation Lights	Check working	X				
Bilge drain plug	Installed and tight	X				
Hull	Check for loose, damaged or missing parts	Whenever out of the water and always after striking an object				
Controls						
Steering	Check for proper operation					Y
Throttle	Lubricate. Include all shift linkage and pivot points		X		X	X
Electrical						
Connections	Check for looseness					Y
Engine						
Cooling System	Check for leaks with engine running	X				
Drive belts	Check for wear	X				
Flame Arrestor	Clean		X		X	
Fuel Filter	Replace				X	
Mounts (Fasteners)	Tighten		X			X
Oil and Filter	Replace				X	X
Oil Level	Check	X				
Propeller	Inspect for damage	Always after striking object				
Fuel System						
Connections & Lines	Check for leaks & wear	X	X	X		
Tanks	Check for leaks & tightness of connections	X	X	X		

KEY: X - Activity required Y - Activity required by qualified individual

7.1 Maintaining the Electrical System

Warning

Work on electrical wiring can create shock hazards or sparks.

Caution

To prevent arcking or damage to the alternator, always disconnect battery cables before doing any work on the engine's electrical system.

Caution

Power feeds for accessory equipment must not be taken from the voltmeter terminals.

Always disconnect power sources and shut off battery switch, breakers and/or pull-fuses before checking electrical wiring or connectors.

- Check all wiring for proper support.
- Check all wiring insulation for signs of fraying or chafing.
- Check all terminals for corrosion - corroded terminals and connectors should be replaced or thoroughly cleaned.
- Tighten all terminals securely and spray them with light marine preservative oil.

7.2 Winter Storage

Your boat and the systems and fittings on board can be damaged if they are not properly prepared for the winter.

You should refer to the advice given in the various handbooks supplied with this manual. In addition to this you should, for example, consider the following:

- Disconnect any gas bottles and place them in safe storage
- Fill the diesel tanks to reduce the effects of condensation
- Remove, charge and store the batteries in a warm and dry ventilated place
- Grease the appropriate steering gear components
- Drain non-fuel tanks
- Drain toilet bowls
- Ensure the engine cooling water has the correct proportion of anti-freeze
- Take away any removable delicate on board electrics and electronics
- Check and protect all the systems on the boat
- Remove all water from the craft and protect it from rain
- Ensure deck drains are clear
- Check the sacrificial anodes and replace as necessary

Warning

The discharge of effluent into navigable waters is forbidden by law in many areas. If such discharge causes a film or sheen upon or a discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water, violators may be subject to a penalty.

It is the responsibility of the boat user to ensure that they are aware of local legislation regarding discharge

8 ENVIRONMENTAL AWARENESS

The previous sections of this manual provide information on how to protect the boat and its crew from the environment. This section gives information on how the environment may be protected from the boat and its crew.

The environment should be understood as including one's neighbours as well as the world of plants and animals.

In many regions of the world, there are strictly enforced regulations regarding environmental protection. It is the responsibility of the owner/operator to be aware of applicable regulations and to ensure compliance with them.

8.1 Leakage of Petrochemicals

ALWAYS:..... Investigate the source of any oil leaks as soon as possible. Dispose of recovered spilt oil correctly.

Have oil-absorbing cloths or rolls on board.

NEVER:..... Dispose overboard of any oil, paint or other chemical that is potentially harmful to the environment. Sanctions are in place in most parts of the world for those who disregard this rule!

Warning

Any oil must be treated as chemical waste.

8.2 Black & Grey Water

Warning

The discharge of effluent into navigable waters is forbidden by law in many areas. If such discharge causes a film or sheen upon or a discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water, violators may be subject to a penalty.

It is the responsibility of the boat user to ensure that they are aware of local legislation regarding discharge

8.3 Household Waste

ALWAYS..... Retain any household waste until it can be properly disposed of ashore.

8.4 Noise

NEVER..... Make excessive noise. Most people take to the water for relaxation which is ruined by noise.

NEVER..... Run the engine or generator unnecessarily.

8.5 Wash / Waves

ALWAYS..... Adapt your speed to the water in which you are navigating. Consider the comfort and safety of other (particularly small) boats around you.

Warning

When at sea for periods longer than space allows onboard storage of waste, only jettison organic waste.

Warning

Be aware that in some areas speed restrictions are in place to avoid erosion of banks/coastline.